* Innovation: What is your product? How is it different from current products?

We are making biological green batteries. In these batteries the chemical solution is replaced by biological material. And the batteries are also heavy metal free and noble/precious metal free.

The benefits are: Green, biological compatible, Safe. And they can be made cheap and light. They may be broadly applied in multiple industries as well as new applications for body sensor and medical devices.

* Development Timeline: Where does your product come from? What testing has been done?

The product is coming from Bioechem LLC at cambrige MA. Initial voltage current test, LED light test have been done.

* Market Potential: What problem do you aim to solve? How large is the market?

Batteries are essential and obviously heavily used in our daily life. However, inside alkaline cells are harmful materials, which we don’t come into contact with during normal use. However, these contaminations are extremely detrimental to human health and eco-system. According to the Agency for Toxic Substances and Disease Registry, mercury poisons the brain, kidneys and lungs. Cadmium causes lung damage, kidney disease and death, while lead harms the kidneys, nervous system and reproductive system. Shockingly, According to the Environmental Protection Agency (EPA), each year Americans throw away more than three billion batteries. That's about 180,000 tons of batteries. More than 86,000 tons of these are alkaline batteries. Imagine, placed end to end these dead alkaline batteries alone would circle the world at least six times each year.

* Our goal is to deliver biologically based green batteries to replace these 180,000tos of toxic batteries. Our batteries don’t contain any toxic heavy metals or non-sustainable precious metals, no strong acid will be generated and they are biologically compatible and degradable. No different than most of the compostable trash, the new battery can be disposed without needs of special treatment. Due to the biological base of our battery is different than the chemical foundation of the traditional alkalinic or lithium battery, this technology will bring a revolutionary change to the global health and environmental impacted by conventional battery. We are also able to apply higher energy density and potentially have more value adding functions under the novel biological concept, which allows the battery to be transformed on shape, size, weight, format and biological compatibility for more diverse applications in medical, defense, special power source and many other application in commercialization demands.
* Intellectual Property: Is your idea defensible?

Provisional and utility patents have been filed back in 2013, 2014 and 2016.

* Team background: Highlight of your team’s expertise and experiences.

- Pei Zhang: PhD in environmental biotechnology, ASU, 2005 to 2009. postdoctoral research associate, MIT, 2013 to 2014. 11 years working in the field of biological electricity generation.

- Youngsoo Joung: PhD, Laboratory for Energy and Microsystems Innovaton, MIT, 2006-2014. Expertise in material engineering.

Future plans: What is the next step to advance your product? What resources are you seeking to achieve that?

- We will seek grants/funding for further R&D and commercialization.

- Look for business and marketing partners for product advance and commercialization.

- Attend conferences, workshops to access broader audience and potential customers.

- Seek social helps and collaborations for faster growth.